

NOTE: Refer to the Supplement at the back of this manual for information unique to 2006-on models.

CHAPTER THREE

LUBRICATION, MAINTENANCE AND TUNE-UP

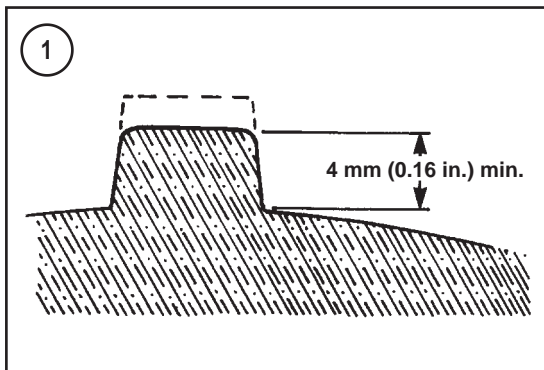
This chapter describes lubrication, maintenance and tune-up procedures.

Tables 1-6 are at the end of this chapter.

PRE-RIDE CHECK LIST

Perform the following checks before riding the ATV. All of these checks are described in this chapter. If a component requires service, refer to the appropriate section.

1. Inspect all fuel lines and fittings for leaks.
2. Make sure the fuel tank is full of fresh gasoline.
3. Make sure the engine oil level is correct.
4. Check the throttle for proper operation in all steering positions. Open the throttle all the way and release it. The throttle should close quickly with no binding or roughness.
5. Check that the brake levers operate properly with no binding. Replace a broken lever. Check the lever housings for damage.
6. Check the brake fluid level in the front master cylinder reservoir. Add DOT 3 or DOT 4 brake fluid if necessary.
7. Check the parking brake operation, and adjust it if necessary.
8. Inspect the front and rear suspension. Make sure they have a good solid feel with no looseness. Turn the handlebar from side to side to check steering play. Service the steering assembly if excessive play is noted. Make sure the handlebar cables do not bind.
9. Check the drive shaft boots for damage.
10. Check tire pressure.
11. Check the exhaust system for looseness or damage.
12. Check for missing or damaged skid plates.
13. Check the undercarriage for dirt, vegetation or other debris that might create a fire hazard or interfere with vehicle operation.
14. Check the tightness of all fasteners, especially engine, steering and suspension mounting hardware.
15. Make sure the headlight and taillight work properly.
16. Check that all switches work properly.
17. Check the air filter drain tube for contamination.
18. If carrying cargo, check that it is properly secured.
19. Start the engine and stop it with the engine stop switch. If the engine stop switch does not work properly, test the switch as described in Chapter Nine.



MAINTENANCE SCHEDULE

Table 1 lists the maintenance schedule for the TRX250EX. Strict adherence to these recommendations helps ensure trouble-free operation. Perform the services more often when operating the vehicle commercially and/or in dusty or other harsh conditions.

Most of the services in **Table 1** are described in this chapter. However, some procedures that require more than minor disassembly or adjustment are covered in the appropriate chapters as indicated.

TIRES AND WHEELS

Tire Pressure

Check and adjust tire pressure (**Table 2**) to maintain good traction, handling and to get the maximum life from the tire. Check tire pressure when the tires are cold.

WARNING

Always inflate the tires to the correct air pressure. If the vehicle is run with

unequal air pressures, the vehicle may run toward one side causing poor handling.

CAUTION

Do not overinflate the tires. They can be permanently distorted and damaged.

Tire Inspection

Because ATVs operate in a variety of terrain, the tires take a lot of punishment. Inspect them daily for excessive wear, cuts, abrasions or punctures. If a nail or other object is found in the tire, mark its location with a light crayon before removing it. Service the tire as described in Chapter Ten.

To gauge tire wear, inspect the height of the tread knobs. If the average tread knob height (**Figure 1**) is less than the minimum tread depth specification in **Table 2**, replace the tire as described in Chapter Ten.

WARNING

Do not ride the vehicle with damaged or excessively worn tires. Poor tires can cause loss of control. Replace damaged or excessively worn tires immediately.

Wheel Inspection

Inspect the wheels for damage. Wheel damage can cause an air leak or knock a wheel out of alignment. Improper wheel alignment can cause vibration and an unsafe riding condition.

Make sure the wheel nuts (**Figure 2**) are tightened securely. Tighten the wheel nuts in a crisscross pattern to 64 N•m (47 ft.-lb.).

BATTERY

Many electrical system troubles can be traced to battery neglect. Inspect and clean the battery at periodic intervals.

Type

All TRX250EX models use a maintenance-free battery. This battery is sealed at the time of service and does not require additional water. Do not

remove the sealing caps to add electrolyte or water; the battery may be damaged.

Because a maintenance-free battery requires a higher voltage charging system, do not replace a maintenance-free battery with a standard battery. Always replace the battery with its correct type and designated capacity. Refer to **Table 4** for battery specifications.

Safety Precautions

When working with batteries, use extreme care to avoid spilling or splashing the electrolyte. This solution contains sulfuric acid, which can ruin clothing and cause chemical burns. If it spills or splashes on clothing or skin, immediately neutralize the affected area with a solution of baking soda and water. Flush the area with an abundance of clean water. While the TRX250EX uses a sealed battery, it vents gasses and electrolyte can leak through cracks in the battery case.

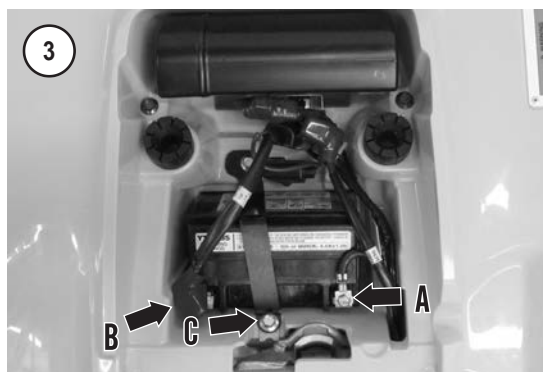
WARNING

Battery electrolyte is extremely harmful when splashed into eyes or an open sore. Always wear safety glasses and appropriate work clothes when working with batteries. If the electrolyte gets into eyes, flush the area thoroughly with clean water and get prompt medical attention.

When charging a battery, highly explosive hydrogen gas forms in each cell. Some of this gas escapes through filler cap openings and can form an explosive atmosphere in and around the battery. This condition can persist for several hours. Sparks, an open flame or a lighted cigarette can ignite the gas, causing an internal battery explosion and possible injury.

When servicing the battery, note the following precautions to prevent an explosion or injury:

1. Do not smoke or permit any open flame near any battery being charged or near a recently charged battery.
2. Do not disconnect live circuits at the battery terminals because a spark usually occurs when a live circuit is broken.
3. Take care when connecting or disconnecting any battery charger. Make sure its power switch is off before making or breaking connections. Poor con-

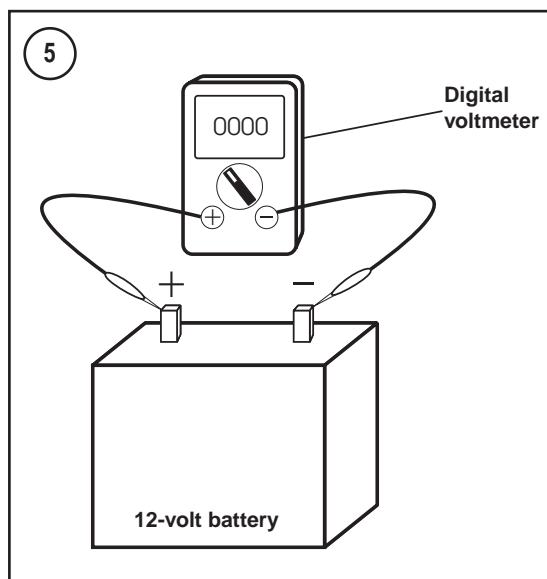


nections are a common cause of electrical arcs that cause explosions.

4. Keep all children and pets away from charging equipment and batteries.
5. Do not open a maintenance free battery.

Removal/Installation

1. Turn the ignition switch off.
2. Remove the seat as described in Chapter Fourteen.
3. Disconnect the negative battery cable (A, **Figure 3**) from the battery.
4. Disconnect the positive battery cable (B, **Figure 3**) from the battery.
5. Remove the battery band (C, **Figure 3**) and lift the battery from the compartment.
6. Service the battery as described in this section.
7. Lower the battery into the battery box so its terminals face the direction shown in **Figure 3**.
8. Secure the battery in place with the battery band (C, **Figure 3**).



9. Coat the battery terminals (A, **Figure 4**) with a thin layer of dielectric grease. This helps retard corrosion of the terminals.

10. Attach the positive battery cable (B, **Figure 3**) to the battery.

11. Attach the negative battery cable (A, **Figure 3**) to the battery.

12. Install the seat (Chapter Fourteen).

Inspection

For a preliminary test, connect a digital voltmeter to the battery negative and positive terminals and measure battery voltage (**Figure 5**). A fully-charged battery reads between 13.0-13.2 volts. If the voltmeter reads 12.8 volts or less, the battery is under-charged. If necessary, charge the battery as described in this chapter.

Table 5 lists battery state of charge readings for maintenance-free batteries.

Testing

When using a battery tester, follow the manufacturer's instructions. For best results, make sure the tester's cables are in working order and clamped tightly onto the battery terminals.

Charging

Always follow the manufacturer's instructions when using a battery charger.

CAUTION

Always remove the battery from the vehicle before charging it. Never connect a battery charger to the battery with the electrical leads still connected to the battery.

1. Remove the battery as described in this section.
2. Connect the positive charger lead to the positive battery terminal and the negative charger lead to the negative battery terminal.

CAUTION

*Do not exceed the recommended charging amperage rate or charging time on the label attached to the battery (B, **Figure 4**).*

CAUTION

Do not charge the battery with a high-rate charger. The high current forced into the battery overheats the battery and damages the battery plates.

3. Set the charger to 12 volts. If the amperage output is variable, select a low setting. Use the following suggested charging amperage and length of charging time:

CAUTION

Standard charging is the preferred charging method. Quick charging should only be used in emergencies.

- a. Standard charge: 1.2 amps at 5 to 10 hours.
- b. Quick charge: 5.0 amps at 1 hour.
4. Turn the charger on.
5. After charging the battery the specified time, turn the charger off and disconnect the charger leads.
6. Connect a digital voltmeter to the battery terminals (**Figure 5**) and measure battery voltage. A fully-charged battery reads 13.0-13.2 volts. Refer to **Table 5**.
7. If the battery voltage remains stable for 1 hour, the battery is charged.
8. Clean the battery cable connectors, battery terminals and case. Coat the terminals with a thin layer

of dielectric grease. This helps retard corrosion of the battery terminals.

9. Reinstall the battery as described in this section.

Cables

To ensure good electrical contact between the battery and the electrical cables, keep the cables clean and free of corrosion.

1. If the electrical cable terminals are badly corroded, disconnect them from the battery as described in this section.
2. Thoroughly clean each connector with a wire brush and a water and baking soda solution. Wipe the area dry with a clean cloth.
3. After cleaning, apply a thin layer of dielectric grease to the battery terminals before reattaching the cables.
4. Reconnect the battery cables as described in this section.
5. Coat the terminals with a thin layer of dielectric grease. This helps retard corrosion of the battery terminals.

Replacement

NOTE

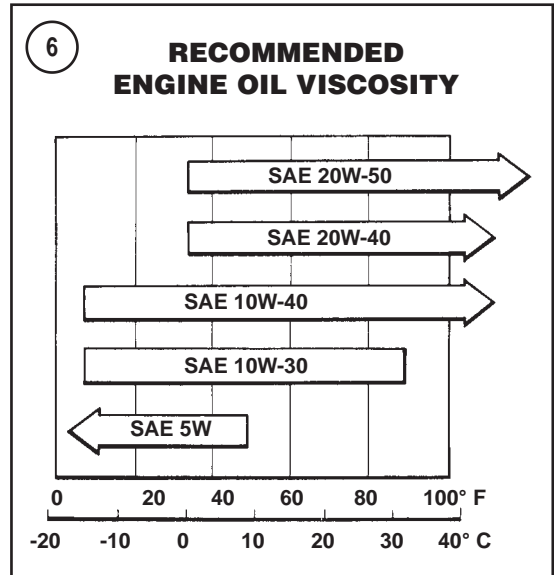
Recycle an old battery. When replacing the battery, turn in the old battery. Most motorcycle dealers accept old batteries in trade when purchasing a new one. **Never** place an old battery in the household trash.

Always replace the battery with another maintenance-free battery. Before installing a new battery, make sure it is fully charged. Failure to do so shortens the useful life of the battery. Undercharging a new battery prevents a battery from ever obtaining a complete charge.

ENGINE OIL AND FILTER

Recommended Engine Oil

Honda recommends the use of Honda GN4 4-stroke oil or an equivalent 10W-40 engine oil with an API service classification of SF or SG. The classification is printed on the container. Try to use the same brand of oil at each oil change. Do not use oils with graphite or molybdenum additives. These

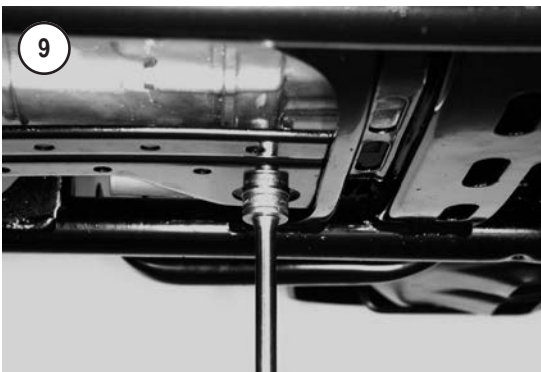
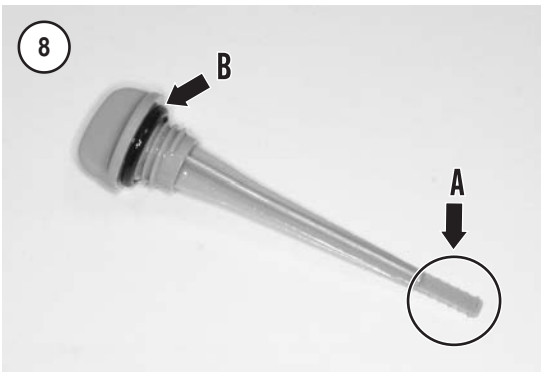
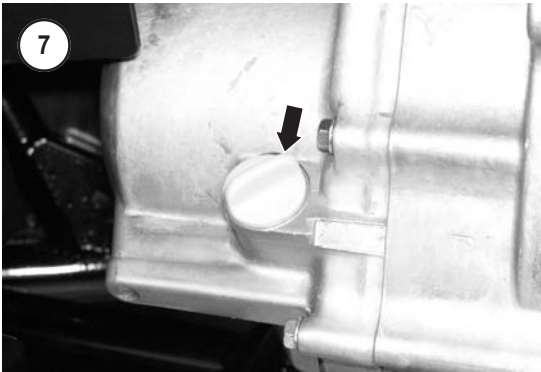


can cause clutch slip and other clutch problems. Refer to **Figure 6** to select the correct weight oil for the anticipated ambient temperatures (not engine oil temperature).

Engine Oil Level Check

Check the engine oil level with the dipstick/oil fill cap mounted on the left side of the engine.

1. Park the vehicle on level ground and set the parking brake.
2. Start the engine and let it run approximately 2-3 minutes.
3. Shut off the engine, and let the oil drain into the crankcase for a few minutes.
4. Unscrew and remove the dipstick/oil fill cap (**Figure 7**). Wipe it clean, and reinsert it onto the threads in the hole. Do not screw it in.
5. Remove the dipstick and read the oil level. The level is correct if it is between the two dipstick lines (A, **Figure 8**). If necessary, add the recommended type oil (**Table 3**) to correct the level.
6. Replace the dipstick O-ring (B, **Figure 8**) if damaged.
7. Install the dipstick/oil fill cap (**Figure 7**) and tighten it securely.



Engine Oil Change

WARNING

Prolonged contact with used oil may cause skin cancer. Wash your hands with soap and water after handling or coming in contact with motor oil.

Table 1 lists the recommended oil and filter change intervals. This assumes the vehicle is operated in moderate climates. If it is operated in dusty

conditions, the oil becomes dirty more quickly and must be changed more frequently.

NOTE

Never dispose of engine oil in the trash, on the ground or down a storm drain. Many service stations and oil retailers accept used oil for recycling. Do not combine other fluids with engine oil for recycling. To locate a recycler, contact the American Petroleum Institute (API) at www.recycleoil.org.

NOTE

Running the engine heats the oil, which enables the oil to flow more freely and carry contaminants and sludge out with it.

1. Park the vehicle on level ground and apply the parking brake.
2. Start the engine, and let it warm to normal operating temperature. Shut the engine off.
3. Place a clean drain pan under the engine.
4. Remove the drain bolt (**Figure 9**), located in the bottom of the engine and drain the oil.
5. Remove the dipstick/oil fill cap (**Figure 7**) to help speed up the flow of oil.
6. Allow the oil to drain completely.
7. Replace the drain plug gasket if it is damaged or if the plug was leaking. Install the drain bolt (**Figure 9**), and tighten it to 25 N•m (18 ft.-lb.).
8. Insert a funnel into the oil fill hole and fill the engine with the correct weight and quantity of oil (**Table 3**).
9. Screw in the dipstick/oil fill cap (**Figure 7**) securely.
10. Start the engine and run at idle speed.
11. Turn the engine off. Check the drain bolt for leaks.
12. Check the oil level and adjust if necessary.

Engine Oil Centrifugal Filter Cleaning

Clean the centrifugal filter at the interval in **Table 1**.

1. Remove the clutch cover as described in Chapter Six.
2. Remove the mounting bolts (A, **Figure 10**) and oil filter cover (B) from the centrifugal clutch.
3. Wipe the clutch filter cover (A, **Figure 11**) and inside of the centrifugal clutch (**Figure 12**) with a clean, lint-free cloth.

4. Inspect the gasket (B, **Figure 11**) on the back of the oil filter cover. Replace the gasket if necessary.
5. Install the oil filter cover (B, **Figure 10**). Apply ThreeBond 1333B to the threads of the mounting bolts and tighten the bolts (A, **Figure 10**) securely.
6. Install the clutch cover as described in Chapter Six.

Engine Oil screen

An oil screen is mounted inside the engine. The engine assembly must be removed and the crankcase split to service the oil screen. Honda recommends the screen be cleaned at the same interval as the centrifugal filter. However, since this is not practical, clean/inspect the screen when there are lubrication problems or when performing engine lower end repairs.

1. Access the oil screen as described in Chapter Five.
2. Simultaneously slide the oil screen (A, **Figure 13**) and oil strainer (B) from the inside of the front crankcase half.
3. Clean the oil screen (A, **Figure 14**) and oil strainer (B).
4. Place the oil screen (A, **Figure 13**) on top of the oil strainer (B), and then install the oil screen/strainer assembly. Install the screen so its narrow side slides into the crankcase half.
5. Reinstall the clutch cover as described in Chapter Six.

FINAL DRIVE OIL

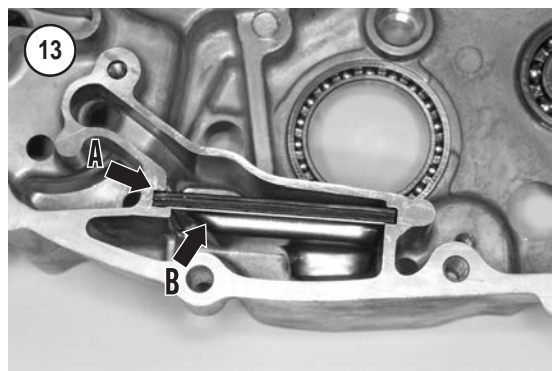
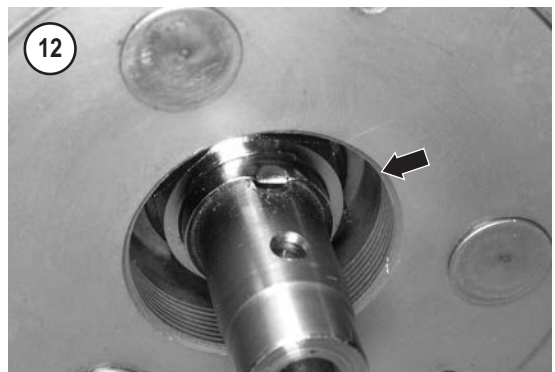
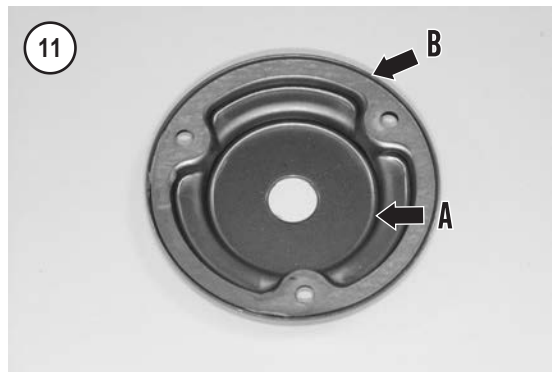
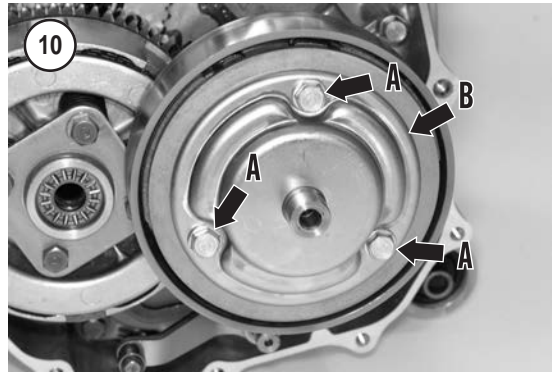
Oil Level Check

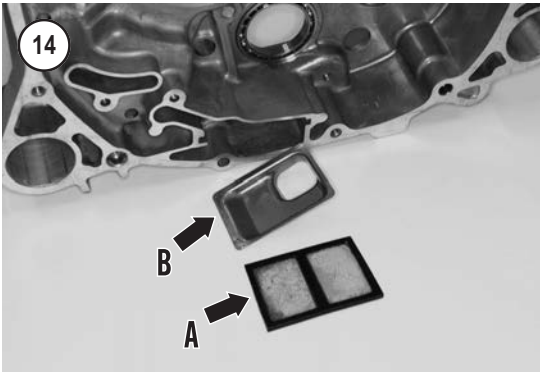
1. Park the vehicle on a level surface and set the parking brake.
2. Clean the area around the oil fill cap (**Figure 15**) and oil check bolt (**Figure 16**).
3. Remove the oil check bolt.

CAUTION

If the oil level is low, inspect the final drive for leaks.

4. Oil should immediately flow from the oil-check-bolt hole once it is removed. If it does not, remove the oil fill cap (**Figure 15**), and add hypoid gear oil (**Table 3**) until oil starts to flow from the bolt hole.





5. Install the oil check bolt, and tighten the bolt to 12 N•m (106 in.-lb.). Replace the sealing washer if necessary.

6. If removed, install the oil fill cap. Apply multi-purpose lithium grease to the cap O-ring, and tighten to 12 N•m (106 in.-lb.).

3

Oil Change

The recommended oil change interval is in **Table 1**. Discard old oil in the same manner described in *Engine oil change* in this chapter.

NOTE

A short ride heats the final drive oil, which enables the oil to flow more freely and carry contaminants and sludge when drained.

1. Ride the vehicle until it reaches normal operating temperature.
2. Park the vehicle on a level surface and set the parking brake. Turn the engine off.

NOTE

Skid plate removal is not necessary to access the drain plug.

3. Place a drain pan underneath the final drive.
4. Remove the oil fill cap (**Figure 15**).
5. Remove the drain bolt (**Figure 17**), and drain the oil.
6. Replace the drain bolt sealing washer if it is damaged or leaking.
7. Install the drain bolt and sealing washer. Tighten the bolt to 12 N•m (106 in.-lb.).
8. Insert a funnel into the oil fill hole and add the recommended type and quantity of gear oil (**Table 3**).
9. Remove the funnel and check the oil level as described in this section. Add additional oil if necessary.
10. Inspect the oil fill cap O-ring. Replace it if damaged.
11. Apply a multipurpose lithium grease to the O-ring, and install the oil fill cap (**Figure 15**). Tighten the cap to 12 N•m (106 in.-lb.).
12. Test ride the vehicle and check for leaks. After the test ride, recheck the oil level. Adjust the oil level if necessary.

GENERAL LUBRICATION

The services in this section are not included in the maintenance schedule (**Table 1**). However, lubricate these items throughout the service year depending on vehicle use. Use a waterproof, multi-purpose lithium grease or equivalent when grease is specified.

Steering Shaft

Remove the steering shaft (Chapter Eleven) and lubricate the bushing with lithium grease. At the same time, check the lower bearing and seals for damage.

Front Control Arms

Remove the pivot bolts from the upper and lower arms. Lubricate the bolts and bushings with lithium grease. Refer to Chapter Eleven for service.

Front Wheel Bearing Seals

Lubricate the front wheel bearing seals with lithium grease. If the front wheel bearings are not sealed, lubricate them. Refer to *Rear Brake Drum* in Chapter Thirteen for front wheel bearing and seal service.

Shock Absorber Pivot Bolt

Remove the front (Chapter Eleven) and rear (Chapter Twelve) shock absorbers and lubricate the mounting bolts with lithium grease.

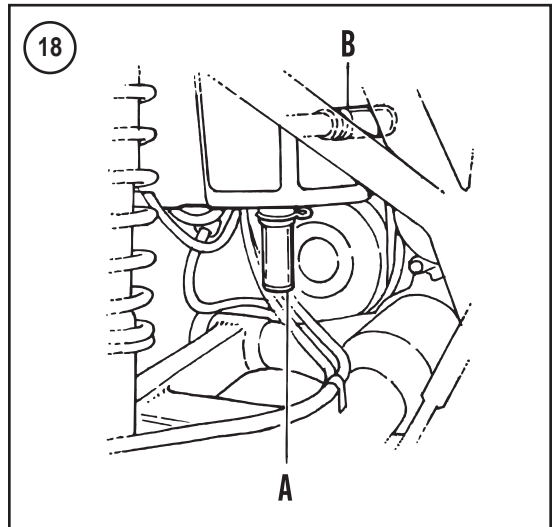
AIR AND FUEL SYSTEM

Air Box Drain Tube

NOTE

*Non-California models use two air box drain tubes: one on the bottom of the air box (A, **Figure 18**); the other on the side (B). California models use only one drain tube.*

Remove and inspect the air box drain tube(s). If a tube is filled with water, dirt and other debris; clean and oil the air filter. Clean the air box and drain tube(s) at the same time.



Air Filter

A clogged air filter decreases the efficiency and life of the engine. Never run the engine without a properly installed air filter. Dust that enters the engine can cause excessive engine wear and clog carburetor jets and passages.

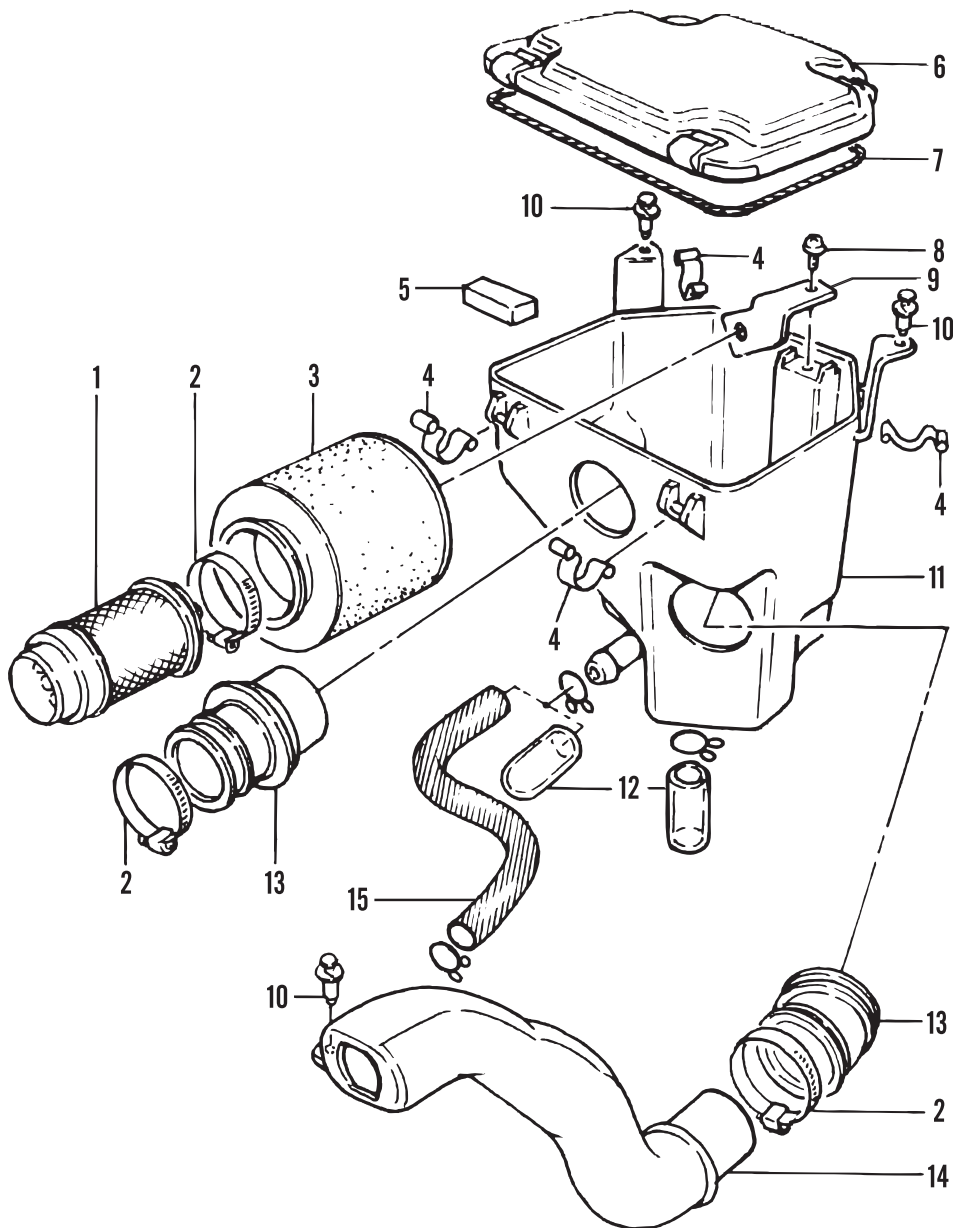
Refer to **Figure 19**.

Removal and installation

1. Remove the seat as described in Chapter Fourteen.
2. Release the spring clips (A, **Figure 20**) and remove the air box cover (B).
3. Loosen the air filter hose clamp (A, **Figure 21**) and mounting screw (B).
4. Remove the air filter assembly (C, **Figure 21**) from the air box.
5. On California models, remove the dust cover (A, **Figure 22**) from the air box.
6. Disassemble, clean and oil the air filter as described in this section.
7. Check the air box and carburetor boot for dirt or other contaminants.
8. Wipe the inside of the air box with a clean rag. If the air box cannot be cleaned with it bolted to the frame, remove it (Chapter Eight).
9. On California models, clean the dust cover with compressed air. Install the dust cover into the air box (A, **Figure 22**) so it sits flat in its seat. Do not compress the dust cover into the seat.
10. Cover the air box opening with a clean shop rag.

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AIR BOX



- | | |
|---|---|
| 1. Core | 9. Holder |
| 2. Clamp | 10. Retaining clip |
| 3. Element | 11. Air box |
| 4. Spring clip | 12. Drain plug (only one
on California models) |
| 5. Dust cover (California
models only) | 13. Connecting tube |
| 6. Cover | 14. Intake air duct |
| 7. Gasket | 15. Breather tube
(California models only) |
| 8. Screw | |

11. Inspect all fittings, hoses and connections from the air box to the carburetor.
12. Install the air filter assembly into the air box so the core properly engages the duct in the front of the box (B, **Figure 22**) and the holder sits in the bracket (C) at the back of the box.
13. Secure the holder into place with the mounting screw (B, **Figure 21**) and tighten the air filter clamp (A).
14. Install the air box cover (B, **Figure 20**), and secure it with the spring clips (A).
15. Install the seat (Chapter Fourteen).

Cleaning

Service the air filter element in a well-ventilated area away from all sparks and flames.

1. Turn the holder (A, **Figure 23**) counterclockwise, and remove it from the air filter element.
2. Remove the hose clamp (B, **Figure 23**) and the core (C) from the filter element.

WARNING

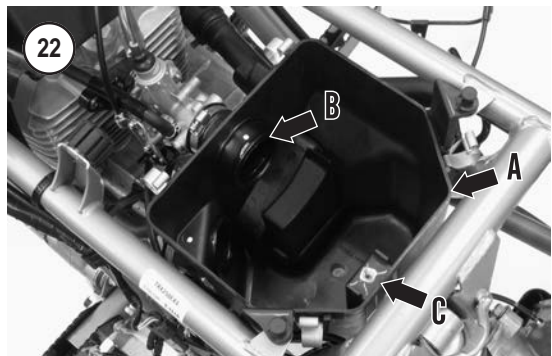
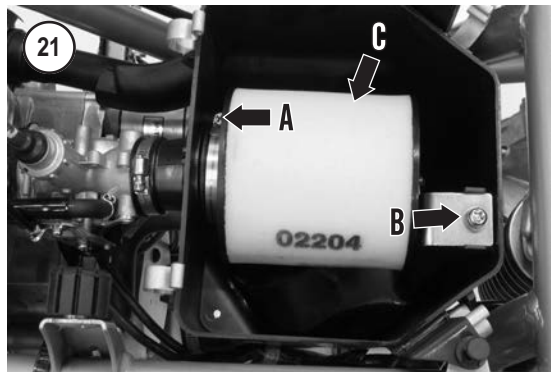
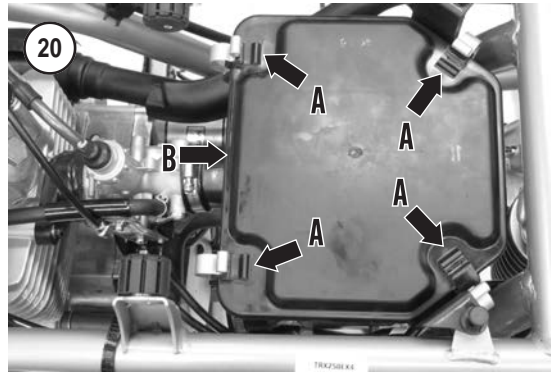
Do not clean the filter element with gasoline.

3. Clean the filter element with a non-flammable or high flash-point solvent to remove oil and dirt.
4. Inspect the filter element. Replace the element if it is torn or broken in any area.
5. Fill a clean pan with liquid detergent and warm water.
6. Submerge the filter element in the cleaning solution and gently work the cleaner into the filter pores. Soak and squeeze (gently) the filter element to clean it.

CAUTION

Do not wring or twist the filter element during cleaning. This could damage the filter pores or tear the filter loose at a seam. This would allow unfiltered air to enter the engine and cause excessive and rapid wear.

7. Rinse the filter element under warm water while soaking and gently squeezing it.
8. Repeat Step 6 and Step 7 until no dirt rinses from the filter element.
9. After cleaning the element, inspect it again carefully. If it is torn or broken in any area, replace it. Do not run the engine with a damaged filter element.

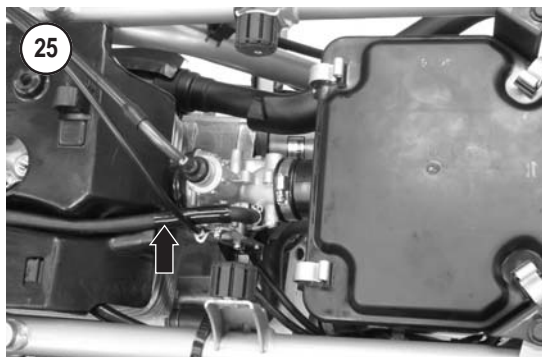
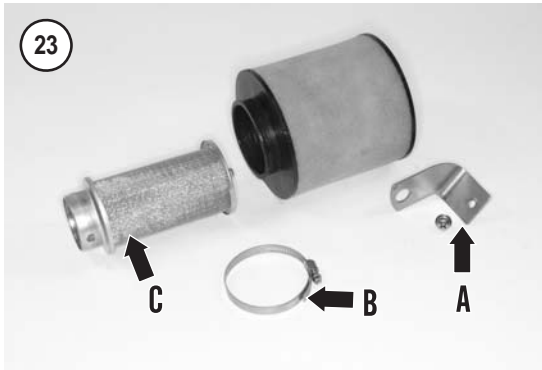


10. Set the filter element aside and allow it to dry thoroughly.
11. Clean and dry the element core (C, **Figure 23**). Check the element core for damage, and replace it if necessary.

CAUTION

Make sure the filter element is completely dry before oiling it.

12. Properly oiling an air filter element is a messy but important job. Wear a pair of disposable rubber gloves when performing this procedure:



- Purchase a box of gallon size storage bags. The bags can be used when cleaning the filter, as well as for storing engine and carburetor parts during disassembly service procedures.
- Place the filter element into a storage bag (**Figure 24**).
- Pour 32-37 ml (1.1-1.3 oz.) of Honda foam filter oil or equivalent into the filter to soak it.
- Gently squeeze and release the filter to soak filter oil into the filter's pores. Repeat this process until all the filter's pores are saturated with oil.

- Remove the filter element from the bag and check the pores for even oiling. This is indicated by light or dark areas on the filter element. If necessary, soak the filter element and squeeze it again.
- When the filter oiling is even, squeeze the filter element a final time.
- Pour the leftover filter oil from the bag back into the bottle for reuse.
- Dispose of the plastic bag.

13. Install the filter element over the element core (C, **Figure 23**). Install the clamp (B, **Figure 23**) and holder (A).

14. Install the filter element assembly as described in this section.

Fuel Line Inspection

WARNING

Some fuel may spill when performing this procedure. Because gasoline is extremely flammable, perform the following procedure away from all open flames (including appliance pilot lights) and sparks. Do not smoke or allow someone who is smoking in the work area. Always work in a well-ventilated area. Wipe up any spills immediately.

WARNING

A damaged or deteriorated fuel line presents a fire hazard to both the rider and machine.

Remove the seat. Inspect the fuel line (**Figure 25**) for leaks, cracks, hardness, age deterioration or other damage. Make sure each end of the hose is secured with a hose clamp. Check the carburetor overflow and vent hose ends for contamination.

Fuel Tank Vent Hose Inspection

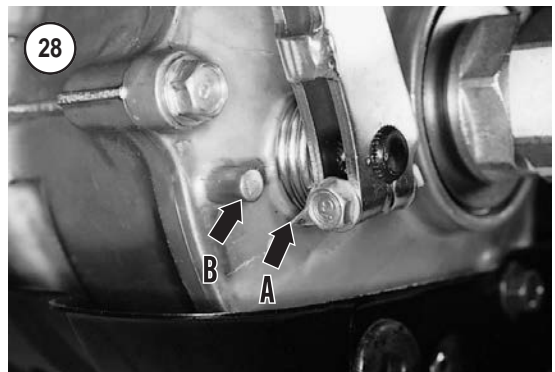
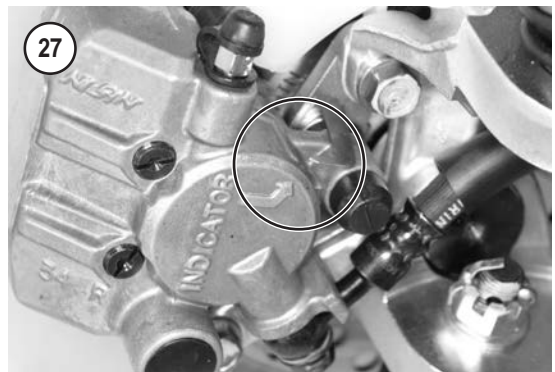
Inspect the fuel tank vent hose (**Figure 26**) for proper routing. Make sure the hose is not kinked and that its end is free of contamination.

BRAKE SYSTEM

Front Brake Pad Inspection

Inspect the brake discs and pads regularly to ensure they are in good condition. A disc can quickly become scored if the brake pads are damaged or have debris lodged in the pad material. If any damage is detected during the following checks, refer to Chapter Thirteen for brake system repair procedures and specifications.

1. Support the vehicle so the wheels are off the ground.
2. Visually inspect the front discs for:
 - a. Scoring—If scoring is evident, refer to Chapter Thirteen for disc specifications and service limits.
 - b. Drag—Turn each wheel and check for drag on the disc. Light drag on the disc is acceptable. If the drag substantially slows the wheel rotation, troubleshoot and repair the brake system.
 - c. Runout—This is the lateral movement of the disc as it spins. It can be detected by spinning the wheel and listening for uneven drag on the disc. This pulsating drag usually indicates disc warp. If warp is suspected, it can be measured with a dial indicator. If the disc is not warped, look for loose or damaged wheel and/or axle components.
 - d. Disc thickness—Measure the thickness of both discs.
3. Observe the position of the brake pad wear lug (cast into the caliper) in relation to the wear indicator pointer (**Figure 27**). If the arrow does not align with the pointer, the brake pads are worn out and must be replaced.

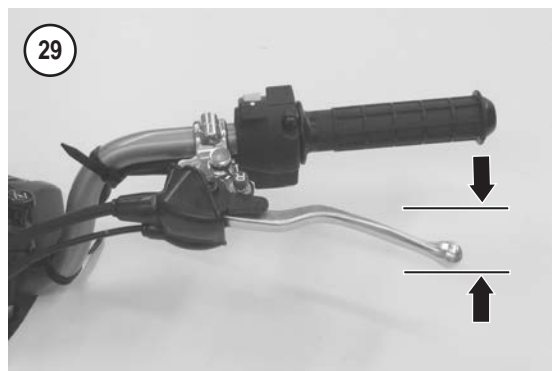


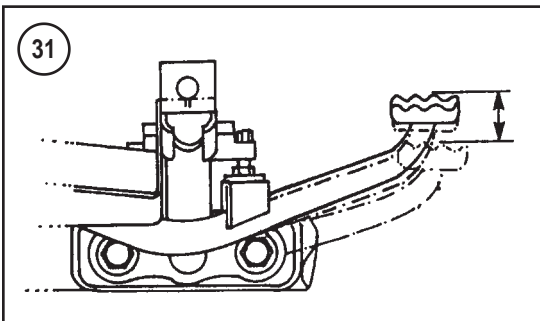
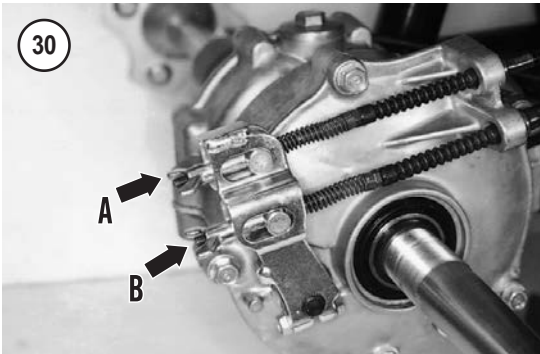
Rear Brake Lining Inspection

Apply the rear brake fully. The brake linings are worn to the service limit if the pointer (A, **Figure 28**) aligns to the index mark (B) on the brake panel while the rear brake is applied. If necessary, replace both rear brake shoes (Chapter Thirteen).

Rear (Parking) Brake Adjustment

1. Before adjusting the rear brake, check the brake pedal, brake cables and adjusters for loose or dam-





aged connections. Replace or repair any damage before continuing with Step 2.

2. Lubricate the rear brake cables as described in this chapter.
3. Release the parking brake if it is set.
4. Check the rear brake linings as described in this section. If the brake lining thickness is within specifications, continue with Step 5.
5. Apply the rear brake lever and measure the amount of free play at the end of the lever until the rear brake starts to engage (**Figure 29**). Note the following:
 - a. If the rear brake lever free play is outside the range specified in **Table 4**, continue with Step 6.
 - b. If the free play travel is within specification, go on to Step 7.

NOTE

Contamination inside the brake drum can cause the brakes to apply too soon. If there is dirt or other debris inside the drum, remove the brake drum and inspect the drum surface and brake linings as described in Chapter Thirteen.

6. Adjust the rear brake lever free play by turning the *upper* adjusting nut (A, **Figure 30**) in or out to achieve the correct amount of free play.

NOTE

Make sure the cutout relief in the adjusting nut is properly seated on the collar.

7. Check the brake pedal free play. With the pedal in the at rest position, apply the brake pedal and check the distance it travels until the rear brake is applied (**Figure 31**). If the brake pedal free play is outside the range specified in **Table 4**, turn the lower adjusting nut (B, **Figure 30**) in or out to achieve the correct amount of free play.

NOTE

Make sure the cutout relief in the adjusting nut is properly seated on the barrel connector.

8. Support the vehicle with the rear wheels off the ground.
9. Rotate the rear wheels and make sure the brake is not dragging. If the brake is dragging, repeat this procedure until there is no drag.

NOTE

Brake drag can also be caused by dirt and other contamination in the brake drum and on the brake linings. If necessary, remove the brake drum (Chapter Thirteen) and check the brake drum and linings.

10. Lower the vehicle so all four wheels rest on the ground.

Brake Fluid Level Inspection

1. Turn the handlebar so the master cylinder is level.
2. Check the brake fluid level through the master cylinder inspection window (A, **Figure 32**). The level should be above the lower level line. If necessary, add brake fluid as follows.

CAUTION

Be careful when handling brake fluid. Do not spill it on painted, plastic or plated surfaces. Brake fluid damages these surfaces. Immediately wash the

area with soap and water and thoroughly rinse it off.

NOTE

If the brake fluid is low, check the front brake lining wear as described in this section.

3. Clean any dirt from the master cylinder cover.
4. Remove the two cover screws (B, **Figure 32**), cover and diaphragm.

WARNING

Use brake fluid clearly marked DOT 3 or DOT 4. Others may cause brake failure. Do not intermix different brands or types of brake fluid because they may not be compatible. Do not use a silicone-based (DOT 5) brake fluid. It can cause brake component damage, leading to brake system failure.

5. Add new DOT 3 or DOT 4 brake fluid to the reservoir until the fluid level rises to the limit line and raises the brake fluid level.
6. Reinstall the diaphragm and cover. Tighten the screws (B, **Figure 32**) securely.

Brake Hose Inspection

Inspect the brake hoses for cracks, cuts, bulges, deterioration and leaks. Check the metal brake lines for cracks and leaks. Refer to Chapter Thirteen for replacement procedures.

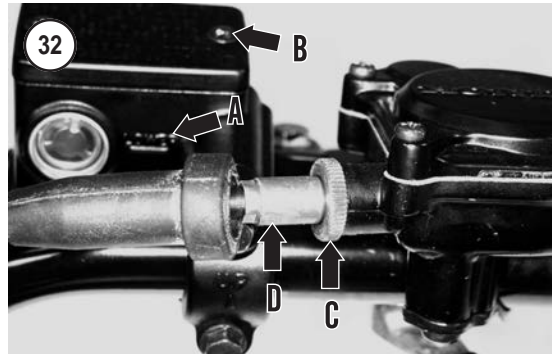
Brake Fluid Change

WARNING

Use brake fluid clearly marked DOT 3 or DOT 4. Others may cause brake failure. Do not intermix different brands or types of brake fluid because they may not be compatible. Do not use a silicone-based (DOT 5) brake fluid. It can cause brake component damage, leading to brake system failure.

WARNING

Never reuse brake fluid. Contaminated brake fluid can cause brake failure.



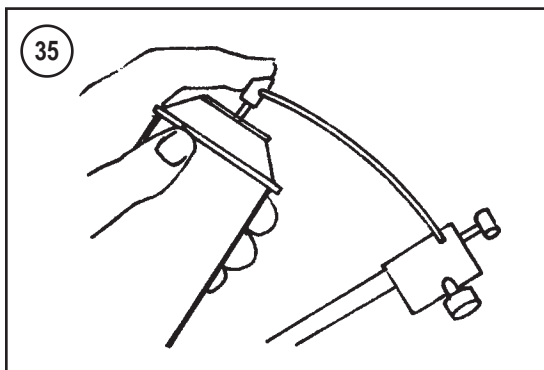
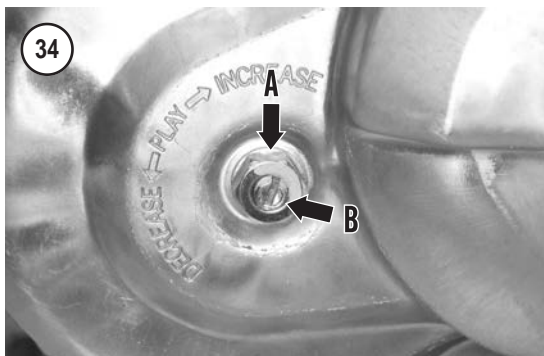
Every time the master cylinder cover is removed, a small amount of dirt and moisture can enter the brake fluid. The same thing happens if a leak occurs or if any part of the hydraulic system is loosened or disconnected. Dirt can clog the system and cause wear and brake failure. Water in the brake fluid causes corrosion inside the hydraulic system, impairing the hydraulic action and reducing the brake's stopping ability.

To maintain peak performance, change the brake fluid every two years or when rebuilding or replacing the master cylinder or a wheel cylinder. To change brake fluid, follow the brake bleeding procedure in Chapter Thirteen.

CLUTCH ADJUSTMENT

Adjust the clutch at the intervals specified in **Table 1**.

This adjustment pertains only to the change (manual) clutch. The centrifugal clutch requires no adjustment. Because there is no clutch cable, the mechanism is the only component that requires adjustment. This adjustment takes up slack due to clutch component wear.



1. Loosen the clutch adjusting screw locknut (A, **Figure 34**).

2. Turn the adjusting screw (B, **Figure 34**) counter-clockwise until resistance is felt, then stop.

3. From this point, turn the adjusting screw clockwise 1/4 of a turn, then stop.

NOTE

Make sure the adjusting screw does not move when tightening the locknut in Step 4.

4. Hold the adjusting screw (B, **Figure 34**) and tighten the locknut (A) securely.

NOTE

If the clutch adjustment is difficult, the friction plates may be worn. Remove the clutch cover and inspect the friction plates as described in Chapter Six.

5. Test ride the vehicle to make sure the clutch is operating correctly. Readjust if necessary.

CABLES

Lubrication

Clean and lubricate the throttle, brake, choke and reverse cables at the intervals indicated in **Table 1**. In addition, check the cables for kinks, excessive wear, damage or fraying that could cause the cables to fail or stick.

The most positive method of control cable lubrication involves the use of a cable lubricator and a can of cable lube or a general lubricant. Do not use chain lube as a cable lubricant. It is too thick and does not travel the length of the cable.

1. Disconnect the cable to be lubricated. Note the following:

- To service the throttle cable, refer to *Throttle Cable Replacement* in Chapter Eight.
- To service the brake cables, refer to *Rear Brake Pedal and Cable* and *Rear Brake Lever/Parking Brake Cable* in Chapter Thirteen.
- To service the choke cable, refer to *Choke Cable Replacement* in Chapter Eight.
- To service the reverse cable, refer to *Reverse Selector Cable Replacement* in Chapter Seven.

2. Attach a cable lubricator (**Figure 35**) to the end of the cable following its manufacturer's instructions.

NOTE

Place a shop cloth at the end of the cable to catch the oil as it runs out.

3. Inject cable lubricant into the cable until it begins to flow out of the other end of the cable.

4. Disconnect the lubricator.

5. Apply a light coat of multipurpose lithium grease to the cable ends before reconnecting them. Reconnect the cable, and adjust it as described in this chapter.

6. After lubricating the throttle cable, operate the throttle lever at the handlebar. It should open and close smoothly with no binding.

7. After lubricating the brake cable(s), check brake operation.

Throttle Cable Inspection and Adjustment

1. Before adjusting the throttle cable, operate the throttle lever and make sure it opens and closes properly with the handlebar turned in different positions.

If not, check the throttle cable for damage or improper routing. Check the throttle lever for damage. Replace or repair any damage before continuing with Step 2.

2. Lubricate the throttle cable as described in this chapter.

3. Operate the throttle lever and measure the amount of free play at the end of the lever (**Figure 36**) until the cable play is taken up and the carburetor lever starts to move. If the free play is outside the range specified in **Table 4**, continue with Step 4.

4. At the throttle housing on the handlebar, slide the rubber boot off the adjuster and loosen the cable adjuster locknut (C, **Figure 32**). Turn the adjuster (D, **Figure 32**) in or out until the free play at the throttle lever is within specification. Hold the adjuster and tighten the locknut securely. Recheck the throttle lever free play while noting the following:

- If the free play measurement is correct, slide the rubber boot over the adjuster, and go to Step 6.
 - If the throttle cable free play cannot be adjusted properly, the cable has stretched excessively. Replace it as described in Chapter Eight.
 - If the proper amount of free play cannot be achieved at the throttle housing adjuster, continue with Step 5.
5. Apply the parking brake.

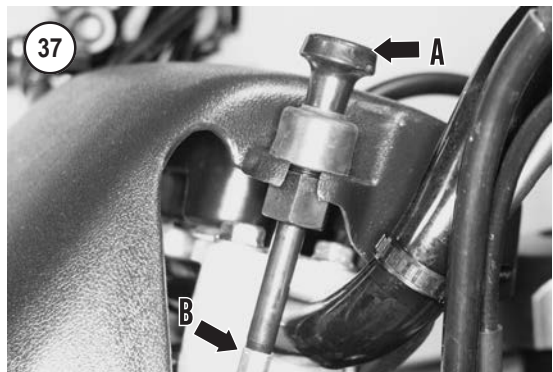
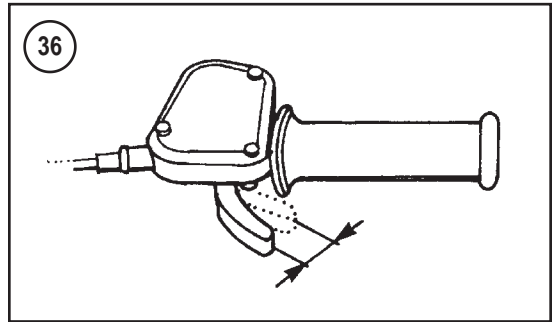
WARNING

A damaged throttle cable prevents the engine from idling properly.

6. Start the engine and allow it to idle in neutral. Turn the handlebar from side to side. If the engine speed increases as the handlebar is turned, the throttle cable is routed incorrectly or there is not enough cable free play. Readjust the throttle cable, or if necessary, replace the throttle cable as described in Chapter Eight.

Choke Cable Inspection and Adjustment

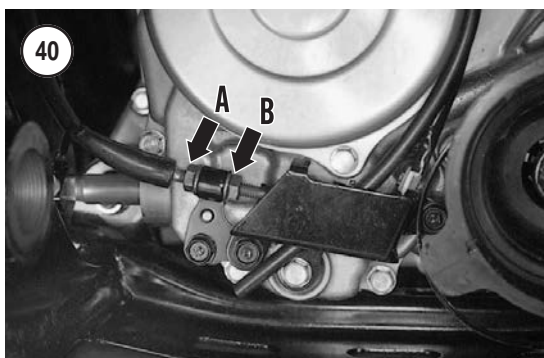
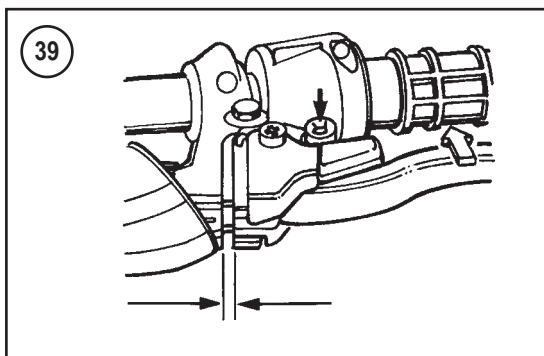
- Operate the choke knob (A, **Figure 37**). It should move smoothly from the fully closed to fully opened position and back again.
- If necessary, lubricate the choke cable as described in this chapter.
- Move the choke knob to its fully closed position.



4. At the carburetor choke lever, press the inner wire cable (**Figure 38**) by hand. The wire should have a maximum of 1-2 mm (0.039-0.079 in.) of free play.

5. Adjust the free play by performing the following:

- Loosen the cable clamp screw (B, **Figure 37**).
- Turn the outer cable until the inner wire free play is 1-2 mm (0.039-0.079 in.) Tighten the cable clamp screw completely.
- If the free play cannot be adjusted to within specification, replace the choke knob/cable assembly as described in Chapter Eight.



6. Visually inspect the choke cable for cracks or other damage. If necessary, replace the choke cable (Chapter Eight).

Reverse Selector Cable Inspection and Adjustment

1. Check the reverse selector cable for loose or damaged cable ends. Check the reverse lever for damage. Repair or replace any damaged parts.
2. If necessary, lubricate the reverse selector cable as described in this chapter.
3. Push the reverse selector knob (**Figure 39**) in while squeezing the rear brake lever, and measure the reverse lever free play (**Figure 39**).
4. If the free play is outside the range specified in **Table 4**, adjust the free play by performing the following:
 - a. Locate the reverse stopper lever on the left side of the alternator cover.
 - b. Loosen the reverse selector cable locknut (A, **Figure 40**).
 - c. Turn the adjuster (B, **Figure 40**) in or out to achieve the correct amount of free play.
 - d. Tighten the locknut and recheck the free play.

5. Start the engine, and shift the transmission into reverse following normal operating procedures. Check that the transmission shifts into and out of reverse correctly.

SPARK ARRESTOR SERVICE

Clean the spark arrestor at the intervals in **Table 1** or sooner if a considerable amount of slow riding is done.

WARNING

To avoid burning your hands, do not perform this cleaning operation when the exhaust system is hot. Work in a well-ventilated area that is free of any fire hazards. Wear eye protection.

1. Remove the three bolts securing the end cap of the engine muffler.
2. Remove the spark arrestor and sealing gasket between it and the muffler body.
3. Use a plastic or brass brush to remove carbon deposits from the screen mesh of the spark arrestor.
4. Replace the spark arrestor if the screen mesh has any breaks or holes in it.
5. Install a new gasket on the spark arrestor and insert it into the muffler. Tighten the bolts to 12 N•m (106 in.-lb.).

SUSPENSION

Steering Shaft and Front Suspension Inspection

Inspect the steering system and front suspension at the interval indicated in **Table 1**. If any of the following mentioned front suspension and steering fasteners are loose, refer to Chapter Eleven for service procedures.

WARNING

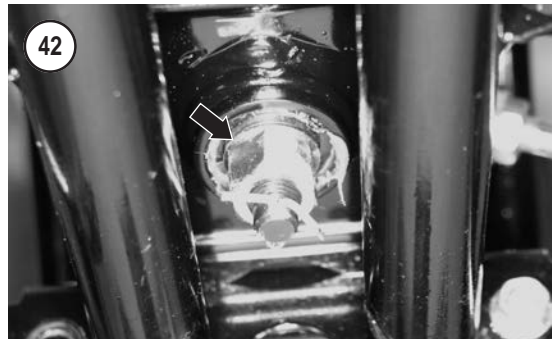
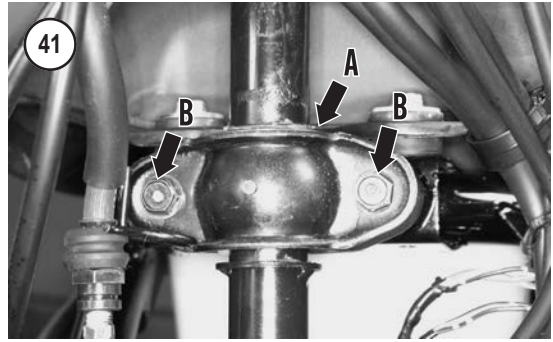
If any cotter pins are removed during inspection, replace them during assembly.

1. Park the vehicle on level ground and set the parking brake.
2. Visually inspect all components of the steering system. Repair or replace damaged components as described in Chapter Eleven.

3. Check the shock absorbers as described in this section.
4. Remove the handlebar cover (Chapter Fourteen). Check that the handlebar holder bolts are tight. Reinstall the handlebar cover.
5. Make sure the front hub nuts are tight and that all cotter pins are in place.
6. Check that the cotter pins are in place on all steering components. If any cotter pin is missing, check the nut for looseness. Tighten the nut and install a new cotter pin as described in Chapter Eleven.
7. Check the steering shaft play as follows:
 - a. Support the vehicle with the front wheels off the ground.
 - b. To check steering shaft radial play, move the handlebar from side to side (without moving the wheels). If radial play is excessive, the upper bushing inside the steering shaft holder (A, **Figure 41**) is probably worn or the steering shaft holder bolts (B) are loose. Replace the upper bushing or tighten the holder bolts as necessary.
 - c. To check steering shaft thrust play, lift up and then push down on the handlebar. If there is excessive thrust play, check the lower steering shaft nut (**Figure 42**) for looseness. If the nut is tightened properly, check the lower steering shaft bearing for excessive wear or damage.
 - d. If necessary, service the steering shaft as described in Chapter Eleven.
 - e. Lower the vehicle so all four tires are on the ground.
8. Check the steering knuckle and tie rod ends as follows:
 - a. Turn the handlebar quickly from side to side. If there is appreciable looseness between the handlebar and tires, check the tie rod ends for excessive wear or damage.
 - b. Service the steering knuckle and tie rods as described in Chapter Eleven.
9. Check the toe-in as described in this section.

Shock Absorber Inspection

1. Check the front and rear shock absorbers for oil leaks, a bent damper rod or other damage.
2. If necessary, replace the shock absorbers as described in Chapter Eleven (front) or Chapter Twelve (rear).

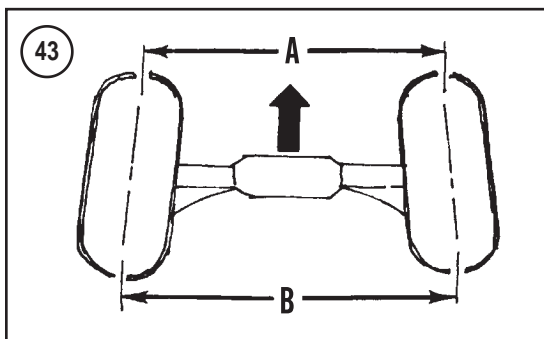


Toe-In Inspection/Adjustment

Toe-in is a condition where the front of the tires are closer together than the back (**Figure 43**). Check the toe-in whenever inspecting the suspension, after servicing the front suspension or when replacing the tie rods.

Adjust toe-in by changing the length of the tie rods.

1. Inflate all four tires to the recommended pressure specified in **Table 2**.
2. Park the vehicle on level ground and set the parking brake.
3. Raise and support the front of the vehicle so both front tires just clear the ground.
4. Turn the handlebar so the wheels are facing straight ahead.
5. Using a tape measure, carefully measure the distance between the center of both front tires at the axle height as shown in A, **Figure 43**. Mark the tires with a piece of chalk at these points. Record the measurement.
6. Rotate each tire exactly 180° so the center marks face rearward.
7. Measure the distance between the center of both front tires (B, **Figure 43**). Record the measurement.
8. Subtract the measurement taken in Step 5 (A, **Figure 43**) from the Step 7 measurement (B).



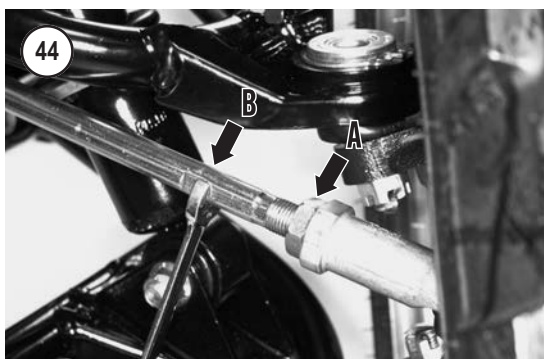
remains the same on each side. If the left- and right-side tie rod lengths are different, refer to **Tie Rods** in Chapter Eleven.

9. If the toe-in is incorrect, adjust it by performing the following:

- Loosen the locknut (A, **Figure 44**) at each end of both tie rods.
- Use a wrench on the flat portion (B, **Figure 44**) of the tie rods, and slowly turn both tie rods the same amount until the toe-in measurement is correct.
- When the toe-in adjustment is correct, hold each tie rod in place and tighten the locknuts to 54 N•m (40 ft.-lb.).
- Recheck toe-in.

10. Lower the vehicle so both front wheels are on the ground.

11. Start the engine and make a slow test ride on level ground. Ride straight while checking that the handlebar does not turn to the left or right side.



Toe-in is correct if the difference equals the specification in **Table 4**.

WARNING

If the tie rods are not adjusted equally, the handlebar is not centered while traveling straight ahead. This condition may cause loss of control. If toe-in cannot be properly adjusted, have it adjusted at a Honda dealership or other qualified shop.

NOTE

Turn both tie rods the same number of turns. This ensures the tie rod length

Rear Suspension Inspection

- Support the vehicle so the rear wheels are off the ground.
- Try to move the rear axle (**Figure 45**) sideways while checking for excessive play at the swing arm bearings.
- If there is any play, check the swing arm pivot bolts for looseness (Chapter Twelve). If they are tightened properly, the swing arm bearings may require replacement. Refer to Chapter Twelve.
- Lower the vehicle so all four tires are on the ground.

Skid Plate Inspection

Inspect the front, middle and rear skid plates for damage and loose fasteners. Repair or replace damaged skid plates. Replace missing or damaged mounting bolts. Tighten the mounting bolts securely.

FASTENER INSPECTION

Constant vibration can loosen many of the fasteners on the vehicle. Check the tightness of all fasteners, especially those on the following components:

- Engine mounting hardware.

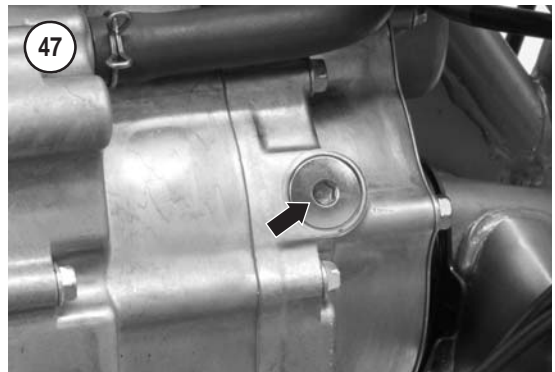
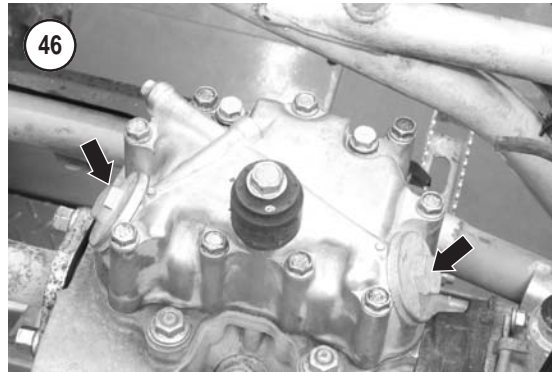
2. Cylinder head.
3. Alternator and clutch covers.
4. Handlebar.
5. Gearshift lever.
6. Brake pedal and lever.
7. Exhaust system.
8. Steering and suspension components.

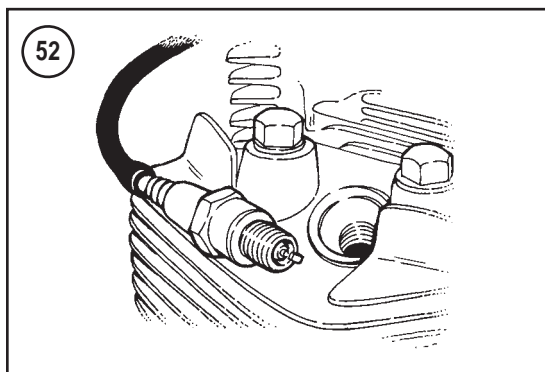
VALVE CLEARANCE

Check and Adjustment

Check and adjust the valve clearance when the engine is cold.

1. Park the vehicle on level ground and set the parking brake.
2. Remove the fuel tank as described in Chapter Eight.
3. Remove the two bolts securing the upper motor mount, and then remove the motor mount and heat guard.
4. Remove the spark plug.
5. Remove the valve adjuster caps (**Figure 46**) and O-rings from the cylinder head cover.
6. Remove the timing hole cap (**Figure 47**) and O-ring.
7. Set the engine to TDC on the compression stroke by performing the following:
 - a. Remove the three bolts and cover from the back of the engine to access the alternator bolt (**Figure 48**). Using a wrench, slowly turn the alternator bolt counterclockwise until the T-mark (**Figure 49**) on the flywheel aligns with the index mark on the rear crankcase cover.
 - b. Check that the piston is at TDC on the compression stroke by moving both rocker arms by hand. Each rocker arm should have some free play. If either rocker arm is tight, turn the crankshaft one full turn and realign the flywheel T-mark with the index mark. Check that both rocker arms are loose.
8. Check the clearance of both the intake valve and exhaust valves by inserting a flat feeler gauge between the rocker arm pad and the valve stem as shown in **Figure 50**. If the clearance is correct, slight resistance is felt when the feeler gauge is withdrawn from the rocker arm pad and valve stem. Refer to **Table 4** for the intake and exhaust valve clearances.
9. To adjust the valve clearance, perform the following:
 - a. Loosen the locknut (**Figure 51**) and turn the adjuster in or out until the clearance is cor-





rect. Turn the square end of the adjuster with a valve adjusting tool (Honda part No. 07908-KE90200) or a 3 mm wrench. The valve is properly adjusted when slight resistance is felt as the feeler gauge is withdrawn from the rocker arm pad and valve stem.

- b. Hold the adjuster to prevent it from turning, and then tighten the locknut to 17 N•m (12 ft.-lb.).
- c. Recheck the clearance to assure the adjuster did not move when the locknut was tightened. If necessary, readjust the valve clearance.
- d. Rotate the engine one full turn counterclockwise and check the clearance of the remaining valve. If necessary, adjust the clearance as described in this section.

10. Install the spark plug and tighten it to 18-22 N•m (13-16 ft.-lb.). Install the spark plug cap.

11. Install the valve adjuster caps (**Figure 46**) and O-rings. Tighten the caps to 20 N•m (14 ft.-lb.).

12. Install the timing hole cap (**Figure 47**) and O-ring. Tighten the cap to 10 N•m (89 in.-lbs.).

13. Install the flywheel bolt cover on the back of the engine.

14. Install the engine heat shield, upper motor mount, and fuel tank (Chapter Eight).

ENGINE COMPRESSION TEST

A cylinder compression test is one of the quickest ways to check the condition of the rings, head gasket, piston and cylinder. Record the compression reading during each tune-up. Compare the current reading with those taken during earlier tune-ups. This helps to spot any developing problems.

1. Warm the engine to normal operating temperature.
2. Remove the fuel tank and heat guard (Chapter Eight).
3. Remove the spark plug. Insert the plug into the plug cap and ground the plug against the cylinder head (**Figure 52**, typical).
4. Install a compression gauge (**Figure 53**) into the cylinder head spark plug hole. Make sure the gauge is seated properly against the hole.
5. Turn the engine stop switch off.

NOTE

The battery must be fully charged or a false compression reading may be obtained. Because the engine must be turning at least 800 rpm, turn the engine over with the starter.

6. Hold the throttle wide open and crank the engine with the starter for several revolutions until the gauge stabilizes at its highest reading. Record the pressure reading and compare it to the cylinder compression specification in **Table 4**.

7. If the reading is higher than normal, there may be a buildup of carbon deposits in the combustion chamber or on the piston crown. This condition can cause detonation and overheating. Service the piston as described in Chapter Four.

8. If the reading is low, allow the engine to cool, and then adjust the valves as described in this chapter.

9. Warm up the engine to normal operating temperature, and perform another compression test. The problem has been corrected if the compression reading is within specification.

10. If the reading is still low, this indicates a leaking cylinder head gasket, a leaking valve or worn, stuck or broken piston rings. To determine which, pour about a teaspoon of engine oil through the spark plug hole onto the top of the piston. Crank the engine once to distribute the oil, then make another compression test and record the reading. If the compression increases significantly, the valves are good but the rings are worn or damaged. If compression does not increase, the valves or the cylinder head gasket is leaking. A valve could be hanging open or a piece of carbon could be on the valve seat.

NOTE

*If the piston rings are worn, stuck or broken, disconnect the crankcase breather tube (**Figure 54**) while the engine is running. If there is smoke inside the tube, check for a stuck or damaged piston ring(s).*

11. Remove the compression tester. Install the spark plug and reconnect the spark plug cap.

12. Install the heat guard and fuel tank (Chapter Eight).

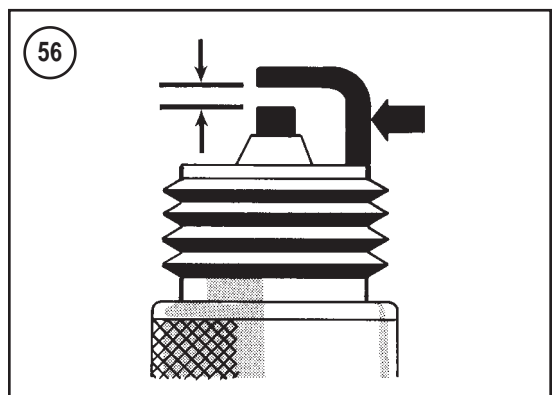
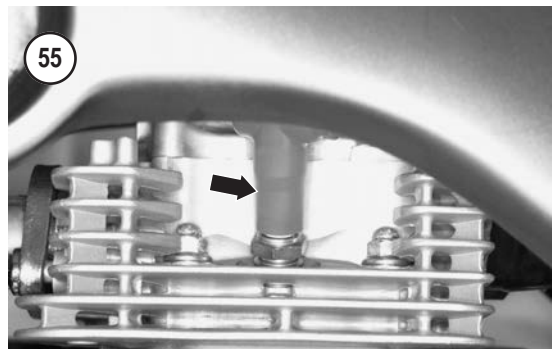
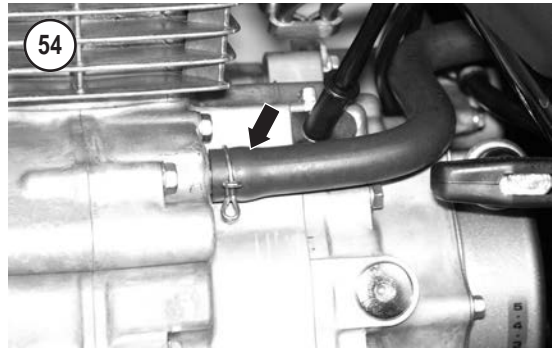
SPARK PLUG

Removal

1. Grasp the spark plug cap (**Figure 55**) as near the plug as possible and pull it off the plug. If the cap is stuck to the plug, twist it slightly to break it loose.

CAUTION

When the spark plug is removed, dirt around it can fall into the plug hole. This can cause engine damage.



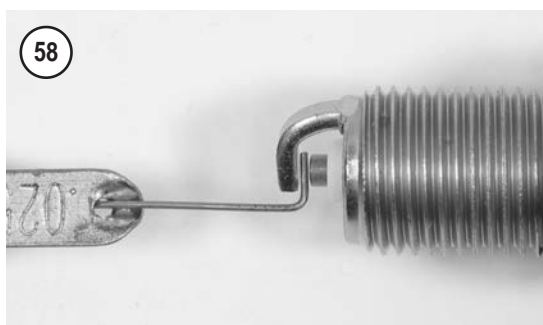
2. Blow away any dirt that has collected around the spark plug.

3. Remove the spark plug with a spark plug socket.

NOTE

If the plug is difficult to remove, apply penetrating oil around the base of the plug and let it soak about 10-20 minutes.

4. Inspect the plug carefully. Look for a broken center porcelain, excessively eroded electrodes and excessive carbon or oil fouling.



Installation

Carefully adjust the electrode gap (**Figure 56**) on a new spark plug to ensure a reliable, consistent spark. Use a spark plug gapping tool (**Figure 57**) and a wire feeler gauge (**Figure 58**).

1. If using an original equipment type spark plug cap, do not install the terminal nut on the end of the new plug.
2. Select a wire feeler gauge that is within the spark plug gap range specified in **Table 4**.
3. Insert the wire feeler gauge between the center and side electrode of the plug. If the gap is correct, a slight drag is felt as the wire gauge is pulled through. If there is no drag or if the gauge does not pass through, bend the side electrode (**Figure 56**) with a gapping tool to set the proper gap.
4. Apply an antiseize compound to the plug threads before installing the spark plug. Do not use engine oil on the plug threads.
5. Screw the spark plug in by hand until it seats. Little effort should be required. If force is necessary, the plug may be cross-threaded. Unscrew it and try again.

CAUTION

Do not overtighten the plug. This only crushes the gasket and destroys its sealing ability.

6. Use a spark plug wrench and tighten the new spark plug to 18 N•m (13 ft.-lb.). If a torque wrench is not available, tighten the plug an additional 1/2 turn after the gasket has made contact with the head. If installing a used spark plug, only tighten it an additional 1/8 to 1/4 turn.

Reading

Reading a plug that has been in use can provide information about spark plug operation, air/fuel mixture composition, and engine operating conditions (oil consumption due to wear for example). Before checking the spark plug, operate the ATV under a medium load for approximately 6 miles (10 km). Avoid prolonged idling before shutting off the engine. Remove the spark plug as described in this section. Examine the plug and compare it to the typical plugs shown in **Figure 59** and match it to the descriptions in this section.

When reading a plug to evaluate carburetor jetting, start with a new plug and operate the ATV at the load that corresponds to the jetting information desired. For example, if the main jet is in question, operate the ATV at full throttle; shut the engine off and coast to a stop.

Normal condition

If the plug has a light tan- or gray-colored deposit and no abnormal gap wear or erosion, good engine, carburetion and ignition condition are indicated. The plug in use is of the proper heat range. It may be serviced and returned to use.

Carbon fouled

Soft, dry, sooty deposits covering the entire firing end of the plug are evidence of incomplete combustion. Even though the firing end of the plug is dry, the plug's insulation decreases. The carbon forms an electrical path that bypasses the spark plug electrodes, causing a misfire. Carbon fouling can be caused by one or more of the following:

1. Too rich fuel mixture.
2. Spark plug heat range too cold.
3. Clogged air filter.
4. Retarded ignition timing.
5. Ignition component failure.
6. Low engine compression.
7. Prolonged idling.

Oil fouled

The tip of an oil fouled plug has a black insulator tip, a damp oily film over the firing end and a carbon layer over the entire nose. The electrodes are not worn. Common causes for this condition are:

1. Incorrect carburetor jetting.
2. Low idle speed or prolonged idling.
3. Ignition component failure.
4. Spark plug heat range too cold.
5. Engine still being broken in.

Oil fouled spark plugs may be cleaned in an emergency, but it is better to replace them. It is important to correct the cause of fouling before the engine is returned to service.

Gap bridging

Plugs with this condition exhibit gaps shorted out by combustion deposits between the electrodes. If this condition is encountered, check for an improper oil type or excessive carbon in the combustion chamber. Make sure to identify and correct the cause of this condition.

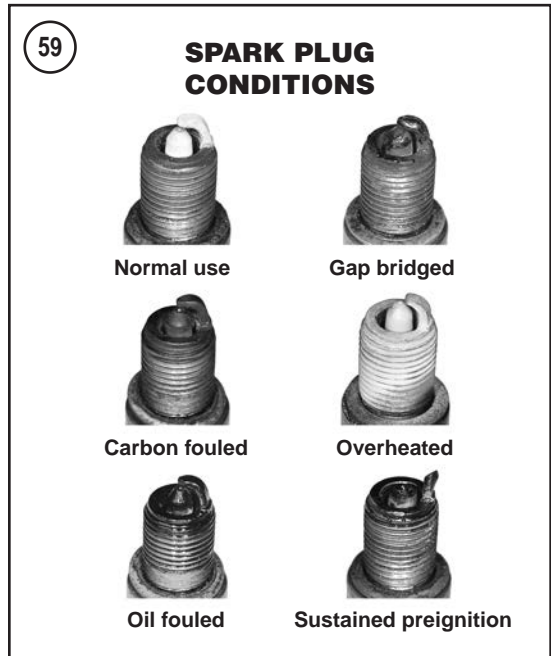
Overheated

Badly worn electrodes and premature gap wear along with a gray or white blistered porcelain insulator surface are signs of overheating. This condition is commonly caused by the use a spark plug that is too hot. If the spark plug had not been changed to a hotter one, but the plug is overheated, consider the following causes:

1. Lean fuel mixture.
2. Ignition timing too advanced.
3. Engine lubrication system malfunction.
4. Engine vacuum leak.
5. Improper spark plug installation (too tight).
6. No spark plug gasket.

Worn out

This occurs when corrosive gasses formed by combustion and high voltage sparks erode the electrodes. Spark plugs in this condition require more voltage to fire under hard acceleration. Install a new spark plug.



Preignition

If the electrodes are melted, preignition is almost certainly the cause. Check for carburetor mounting or intake manifold leaks and over-advanced ignition timing. A plug that is too hot can also cause this condition. Find and correct the cause of the preignition before returning the engine into service.

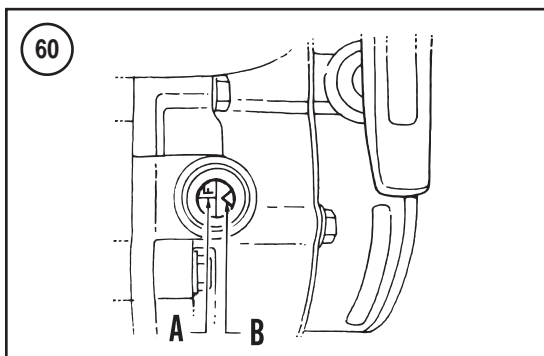
Heat Range

Spark plugs are available in different heat ranges, hotter or colder than the plugs originally installed. Select plugs with the heat range designed for the loads and conditions under which the ATV operates. Using a plug with an incorrect heat range can cause plug fouling or overheating and can lead to piston damage.

In general, use a hot plug for low speeds and low temperatures. Use a cold plug for high speeds, high engine loads and high temperatures. The plug should operate hot enough to burn off unwanted deposits but not so hot that it burns itself or causes preignition. To determine if the plug heat range is correct, remove the spark plug and examine the insulator.

Do not change the spark plug heat range to compensate for adverse engine or carburetion conditions. Compare the insulator to those in **Figure 58**.

When replacing the plug, make sure the reach is correct. A longer-than-standard plug can interfere



with the piston and cause engine damage. A shorter-than-standard type may foul due to the firing tip being shrouded within the spark plug hole.

Refer to **Table 4** for spark plug recommendations.

IGNITION TIMING INSPECTION

All models are equipped with a capacitor discharge ignition system (CDI). Ignition timing is not adjustable. Check the ignition timing to make sure all components within the ignition system are working correctly. If the ignition timing is incorrect, troubleshoot the ignition system as described in Chapter Two. Incorrect ignition timing can cause a loss of engine performance and efficiency. It may also cause overheating.

Before starting this procedure, check all electrical connections and grounds in the ignition system circuit. They must be tight and free from corrosion.

1. Start the engine and let it warm about 2-3 minutes.
2. Park the vehicle on level ground, apply the parking brake and shut off the engine.
3. Remove the timing hole cap (**Figure 47**) and O-ring.
4. Connect a portable tachometer following its manufacturer's instructions.

5. Connect a timing light following its manufacturer's instructions.

6. Restart the engine and let it run at the idle speed indicated in **Table 4**. Adjust the idle speed if necessary as described in this chapter.

7. Aim the timing light at the timing window and pull the trigger. The F-mark on the flywheel should align with the index mark on the rear crankcase cover (**Figure 60**). If the ignition timing is incorrect, troubleshoot the ignition system as described in Chapter Two.

8. Turn the ignition switch off, and disconnect the timing light and portable tachometer.

9. Install the timing hole cap. Lubricate the O-ring with oil and tighten the cap to 10 N•m (89 in.-lb.).

IDLE SPEED ADJUSTMENT

NOTE

The pilot screw does not require adjustment unless the carburetor is overhauled or a new pilot screw is installed. To adjust the pilot screw, refer to Chapter Eight.

1. Start the engine and let it warm up approximately 10 minutes.
2. Park the vehicle on level ground, apply the parking brake and shut off the engine.
3. Connect a portable tachometer to the engine following its manufacturer's instructions.
4. Remove the right side cover as described in Chapter Fourteen.
5. Restart the engine and turn the throttle stop screw (**Figure 61**) until the idle speed is within the range specified in **Table 4**.
6. Open and close the throttle a couple times and check for variation in idle speed. Readjust if necessary.

WARNING

With the engine idling, move the handlebar from side to side. If idle speed increases as the handlebar is moved, the throttle cable needs adjusting or may be incorrectly routed through the frame. Correct this problem immediately. Do not ride the ATV in this condition.

7. Turn the engine off and disconnect the portable tachometer.
8. Install the right side cover (Chapter Fourteen).

Table 1 MAINTENANCE SCHEDULE

After the first 20 hours or the first 100 miles (150 km) of use	<ul style="list-style-type: none"> Check and adjust the valve clearance. Change the engine oil. Check and adjust the engine idle speed. Inspect the reverse lock system. Clean, lubricate and adjust the cable as necessary. Inspect the clutch system. Adjust as necessary. Check all fasteners. Tighten as necessary. Inspect the tires and wheels.
Every 100 hours or 600 miles (1000 km of use)	<ul style="list-style-type: none"> Clean the air filter. Inspect the air filter housing drain. Inspect the spark plug. Check and adjust the valve clearance. Change the engine oil. Check and adjust the engine idle speed. Inspect and adjust the brake fluid level. Inspect the brake system. Clean, lubricate and adjust the cable as necessary. Inspect the reverse lock system. Clean, lubricate and adjust the cable as necessary. Inspect the clutch. Adjust as necessary. Inspect the skid plates and engine guard. Inspect the front and rear suspension. Clean the spark arrester. Inspect the tires and wheels.
Every 200 hours or 1200 miles (2000 km) of use	<ul style="list-style-type: none"> Clean the air filter. Inspect the air filter housing drain. Check the fuel line. Check the operation of the throttle. Clean, lubricate and adjust the cable as necessary. Check the operation of the choke. Clean, lubricate and adjust the cable as necessary. Inspect the spark plug. Inspect the brake system. Check and adjust the valve clearance. Change the engine oil. Clean the engine oil centrifugal filter. Check and adjust the engine idle speed. Inspect the brake fluid. Add fluid as necessary. Inspect the brake shoes for wear. Inspect the brake system. Clean, lubricate and adjust the cables as necessary. Inspect the reverse lock system. Inspect the clutch. Adjust as necessary. Inspect the skid plates and engine guard. Inspect the front and rear suspension. Clean the spark arrester. Inspect all fasteners. Tighten them as necessary. Inspect the tires and wheels. Inspect the steering shaft holder bearing. Lubricate the bearing as necessary. Inspect the steering system. Replace the final drive oil.
Every 2 years	

Table 2 TIRE SPECIFICATIONS

Front tire	
Size	AT22 x 7-10
Manufacturer	Dunlop KT 171
Minimum tread depth	4 mm (0.16 in.)
Rear tire	
Size	AT22 x 10-9
Manufacturer	Dunlop KT 175
Minimum tread depth	4 mm (0.16 in.)
Inflation pressure (cold)*	
Standard	
Front	30 kPa (4.4 psi)
Rear	20 kPa (2.9 psi)
Minimum, (front and rear)	
Front	26 kPa (3.8 psi)
Rear	17 kPa (2.5 psi)
With cargo (front and rear)	
Front	30 kPa (4.4 psi)
Rear	20 kPa (2.9 psi)
Maximum (front and rear)	
Front	34 kPa (5.0 psi)
Rear	23 kPa (3.3 psi)
*Tire inflation pressure for original equipment tires. Aftermarket tires may require different inflation pressures.	

Table 3 RECOMMENDED LUBRICANTS AND FLUIDS

Fuel	
Octane	Regular unleaded
Tank capacity w/reserve	10.2 L (2.7 gal.)
Tank reserve capacity	2.5 L (0.66 gal.)
Engine oil	
Grade	API SF or SG
Viscosity	10W-40
Capacity	
Oil change	1.6 L (1.7 qt.)
Disassembly	1.9 L (2.0 qt.)
Brake fluid	DOT 3 or DOT 4
Cooling system	Air cooled
Final drive oil	
Grade	Hypoid gear oil SAE 80
Capacity	
Oil change	80 ml (2.7 oz.)
After disassembly	100 ml (3.4 oz.)

Table 4 MAINTENANCE AND TUNE-UP SPECIFICATIONS

Battery	
Capacity	12 V – 8 AH
Current draw (maximum)	1 mA
(continued)	

Table 4 MAINTENANCE AND TUNE-UP SPECIFICATIONS (continued)

Battery (continued)	
Voltage	
Fully charged	13.0-13.2 V
Needs charging	Less than 12.3 V
Charge current	
Normal	1.2 A / 5-10 hours
Quick*	5.0 A / 1.0 hour
Spark plug	
Standard	NGK DPR8EA-9 or ND X24EPR-U9
Cold climate (5° C/41° F)	NGK DPR7EA-9 or ND X22EPR-U9
For extended high-speed operation	NGK DPR9EA-9 or ND X27EPR-U9
Spark plug gap	0.8-0.9 mm (0.031-0.035 in.)
Ignition timing	14° BTDC @ 1700 rpm
Idle Speed	1300-1500 rpm
Valve clearance	
Intake	0.13 mm (0.005 in.)
Exhaust	0.13 mm (0.005 in.)
Cylinder compression	1275 kPa (185 psi) @ 800 rpm
Front Brake pad thickness	To wear indicator
Rear drum brake lining thickness	4.5 mm (0.18 in.)
Front disc brake thickness	2.8-3.2 (0.11 - 0.13)
Rear brake lining wear limit	To wear indicator
Throttle lever free play	3-8 mm (1/8 - 5/16 in.)
Reverse selector lever free play	2-4 mm (1/16-1/8 in.)
Front brake lever free play	25-30 mm (1-1 1/4 in.)
Rear (parking) brake lever free play	15-20 mm (5/8-3/4 in.)
Brake pedal free play	15-20 mm (5/8-3/4 in.)
Toe-in	2.3 mm (3/32 in.)
*Perform a quick charge only in an emergency. Excessive charging amperage can damage the battery.	

Table 5 BATTERY VOLTAGE READINGS*

State of charge	Voltage readings
100%	13.0-13.2 volts
75%	12.8 volts
50%	12.5 volts
25%	12.2 volts
0%	12.0 volts or less
*For maintenance-free batteries	

Table 6 MAINTENANCE AND TUNE UP TORQUE SPECIFICATIONS

Item	N•m	in.-lb.	ft.-lb.
Brake bleed valve	6	53	—
Brake hose banjo bolt	34	—	25
Engine oil drain bolt	25	—	18
Final drive			
Drain bolt	12	106	—
Oil check bolt	12	106	—
Oil fill cap	12	106	—
Front hub nut	69	—	51
Rear hub nut	147	—	108
Spark arrester bolts	12	106	—
Spark plug	18-22	—	13-16
Tie rod locknuts	54	—	40
Timing hole cap	10	89	—
Valve adjuster cap	20	—	15
Valve adjuster locknut	17	—	12
Wheel nuts	64	—	47

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